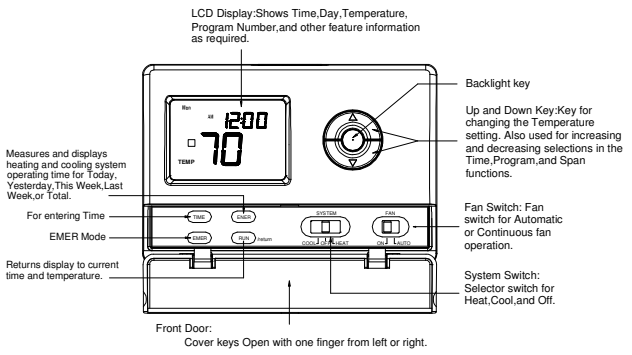
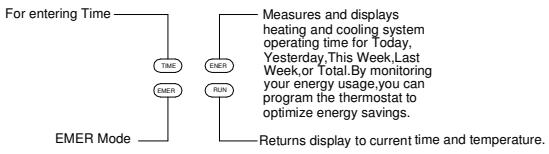
Digital Thermostat Owners Manual

Model:A3706


LCD Display:Shows Time,Day,Temperature, Program Number,and other feature information as required.
Backlight key
Up and Down Key:Key for changing the Temperature setting. Also used for increasing and decreasing selections in the Time,Program,and Span functions.
Measures and displays heating and cooling system operating time for Today, Yesterday,This Week,Last Week,or Total.
For entering Time
EMER Mode
Returns display to current time and temperature.
Fan Switch: Fan switch for Automatic or Continuous fan operation.
System Switch: Selector switch for Heat,Cool,and Off.
Front Door:
Cover keys Open with one finger from left or right.

FEATURES

Structure of thermostat and explanation for the keypads


For entering Time
Measures and displays heating and cooling system operating time for Today, Yesterday,This Week,Last Week,or Total.By monitoring your energy usage,you can program the thermostat to optimize energy savings.
EMER Mode
Returns display to current time and temperature.

We are pleased you have selected one of our broad line of wall thermostat. Our products are manufactured to high quality standards and are designed for years of service.

Read This Before Installing Thermostat

OPERATION

YOUR THERMOSTAT REPLACES

Description	CP2801
Heat Pump (No Aux. or Emergency Heat)	Yes
Heat Pump (with Aux. or Emergency Heat)	Yes
Standard Heat & Cooling Systems	Yes
Two Stage Heat & Two Stage Cool	Yes
Standard Heat Only Systems	Yes
Millivolt Heat Only Systems– Floor or Wall Furnaces	Yes
Standard Central Air Conditioning	Yes
Gas or Oil Heat	Yes
Electric Furnace	Yes
Hydronic (Hot Water) Zone Heat-2 Wires	Yes
Hydronic (Hot Water) Zone Heat–3 Wires	No

This Thermostat will NOT control 110/220Volt systems.

IMPORTANT

2**,** Read the entire installation section of this Owner's Manual thoroughly before you begin to install or operate your Thermostat.

This thermostat can be used for conventional or heat pump system, Please configure the thermostat according to Configuration Menu before operation.

REMOVE THE MYLAR LABEL FORM THE LCD DISPLAY WINDOW.

INSTALLATION

3**,** All installation is normally performed at your thermostat.

COMPRESSOR PROTECTION

4，The thermostat provides a 4 minutes delay after shutting of the heating or cooling system before it can be restarted. This feature will prevent damage to your compressor caused by rapid cycling. Note that this delay also applies to the heating system control. It does not provide a delay when there are power outages.you can select the function on or off at the configuration.

TEMPERATURE RANGE

5,This thermostat can be programmed between 45˚F and 95˚F (7˚C and 35˚C). However, it will display room temperatures from 30˚F to 99˚F (0˚C and 37˚C). "HI" will be displayed if the temperature is higher than 99˚F (37˚C), and "LO" will be displayed if the temperature is lower than 30˚F (0˚C).This thermostat will automatically cutoff in Heat mode if the temperature rises above 95˚F (35˚C), and automatically cutoff in Cool mode if the temperature drops below 45˚F (7˚C).

NOTE: if the thermostat measure a temperature over 99˚F(37℃), "HI" will be displayed on the LCD. if the temperature is below 32˚F(0℃). and "LO" will be displayed on the LCD.

POWER FAILURE

6， Whenever the main power is interrupted or fails, the battery power retains and current time. This thermostat has permanent memory, although you will have to reset your clock when there are power outages.

POWER SUPPLY

7，The thermostat shall be powered by 24 VAC and with batteries as backup.

BATTERY WARNING

8，Fresh alkaline batteries should provide about one year of service. However, when the batteries become drained, "BATT" will alternate on the display with the current time. When this message occurs, install 2 new AA batteries, You have approximately 1 minute to change the batteries and keep thermostat's clock. Once the batteries have become too low to ensure proper operation, your system will be turned off, and the display will be cleared except for "BATT" flashing on the LCD display.

CAUTION: Once only the "BATT" only display occurs, the thermostat is shut down, and your system will no longer operate. In this condition, there is no temperature control of your dwelling. *NOTE: The backlight will not function when the thermostat is in low battery condition.*

NOTE: If you plan to be away from the premises over 30 days, we recommend that you replace the old batteries with new alkaline batteries prior to leaving.

INSTALLATION

What You Need

This thermostat includes two #8 slotted screws and two wall anchors for mounting. To install your thermostat, you should have the following tools and materials.

■ Slotted Screwdriver(s) ■ Small Philips screwdriver ■ Hammer

■ Electric drill and 3/16" bit ■ Two1.5V (AA) size alkaline batteries (included)

CAUTION:

To prevent electrical shock and/or equipment damage, disconnect electric power to system at main fuse or circuit breaker box until installation is complete.

Before removing wires from old thermostat's switching subbase, label each wire with the terminal designation it was removed from.

1. Shut off electricity at the main fuse box until installation is complete.

Ensure that electrical power is disconnected.

2. Remove Old Thermostat: A standard heat/cool thermostat consists of three basic parts:

a. The cover, which may be either a snap-on or hinge type.

b. The base, which is removed by loosening all captive screws.

c. The switching subbase, which is removed by unscrewing the mounting screws that hold it on the wall or adaptor plate.

3. Remove the front cover of the old thermostat. With wires still attached, remove wall plate from the wall. If the old thermostat has a wall mounting plate, remove the thermostat and the wall mounting plate as an assembly.

4. Identify each wire attached to the old thermostat.

5. Disconnect the wires from the old thermostat one at a time. DO NOT LET WIRES FALL BACK INTO THE WALL.

6. Install new thermostat using the following procedures.

WARNING

Do not use on circuits exceeding specified voltage. Higher voltage will damage control and could cause shock or fire hazard. Do not short out terminals on gas valve or primary control to test. Short or incorrect wiring will damage thermostat and could cause personal injury and/or property damage.

Selector Switches

Electric/Gas Switch (Fan Option)

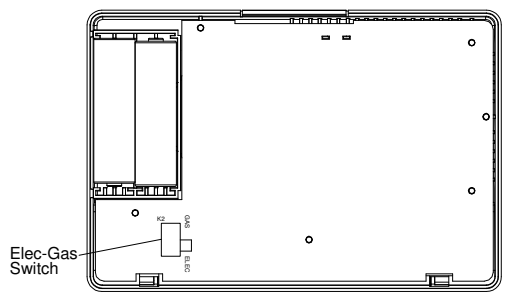


Figure 1. Electric/Gas Switch (Fan Option)

This thermostat is configured from the factory to operate a heat/ cool, fossil fuel (gas, oil, etc.), forced air system. It is configured correctly for any system that DOES NOT require the thermostat to energize the fan on a call for heat. If you system is an electric heat or heat-pump system that requires the thermostat to turn on the fan on a call for heat, locate the ELEC/GAS switch on the back of the thermostat (see fig. 1) and switch it to the ELEC position. This will allow the thermostat to energize the fan immediately on a call for heat. If you are unsure if the heating/ cooling system requires the thermostat to control the fan, contact a qualified heating and air conditioning service person. When the thermostat is configured for Heat Pump, the thermostat will always power the circulator fan on a call for heat in the HEAT mode. The ELEC/GAS switch must be set to match the type of Auxiliary heat your system uses for proper operation in the EMERgency mode.

All wiring diagrams are for typical systems only. Refer to equipment manufacturers' instructions for specific system wiring information.

Attach Thermostat Base to Wall

1. Remove the packing material from the thermostat. Gently pull the cover straight off the base. Forcing or prying on the thermostat will cause damage to the unit.

2. Connect wires beneath terminal screws on base using appropriate wiring schematic (see figs. 2 through 4).

3. Place base over hole in wall and mark mounting hole locations on wall using base as a template.

4. Move base out of the way. Drill mounting holes.

5. Fasten base loosely to wall, as shown in fig. 1, using two mounting screws. Place a level against bottom of base, adjust until level, and then tighten screws. (Leveling is for appearance only and will not affect thermostat operation.) If you are using existing mounting holes, or if holes drilled are too large and do not allow you to tighten base snugly, use plastic screw anchors to secure subbase.

6. Push excess wire into wall and plug hole with a fireresistant material (such as fiberglass insulation) to prevent drafts from affecting thermostat operation.

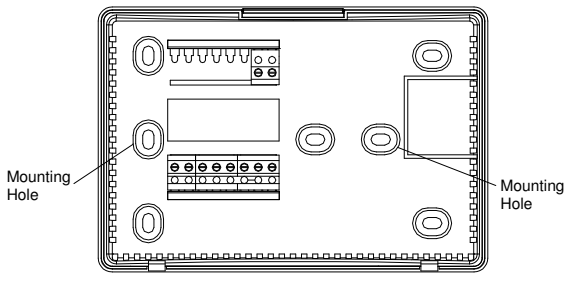


Figure 2. Thermostat base

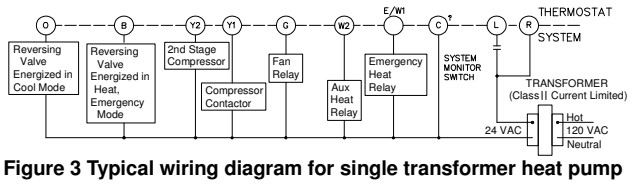


Figure 3 Typical wiring diagram for single transformer heat pump systems

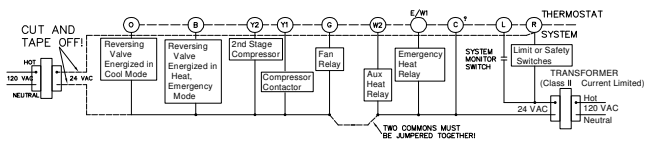


Figure 4. Typical wiring diagram for two transformer heat pump systems with NO safety circuits

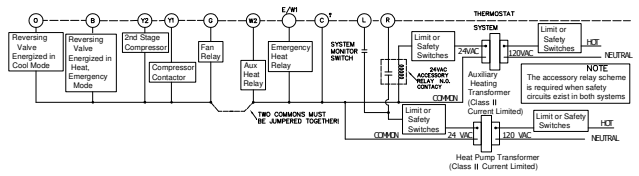


Figure 5. Typical wiring diagram for two transformer heat pump systems with safety circuits in BOTH systems

Heat Pump Terminal Outputs

Refer to equipment manufacturers' instructions for specific system wiring information. You can configure the thermostat for use with the following heat pump system types: HEAT PUMP TYPE 1 1. Single stage compressor system; gas or electric backup. This thermostat is designed to operate a single-transformer system. If you have a two-transformer system, cut and tape off one transformer. If transformer safety circuits are in only one of the systems, remove the transformer of the system with NO safety circuits. If required, replace remaining transformer with a 75VA Class II transformer. After disconnecting one transformer, the two commons must be jumpered together.

Use the terminal output information below to help you wire the thermostat properly for your heat pump system. After wiring, see CONFIGURATION section for proper thermostat configuration.

THERMOSTAT TERMINALS (HEAT PUMP)		
SYSTEM	Heat Pump 1	Heat Pump 2
L	Malfunction	
C*	24 Volt(Common)	
R	24 Volt Emergency (hot)	
E/W1	Emergency Mode 1st stage	
W2	HP 1 and Emergency 2nd stage	
Y1	Heat and Cool mode 1st stage (compressor)	
Y2	No output	2nd stage compressor
G	Blower/Fan Energized on call for Heat and Cool Set GAS/ELEC switch for Emergency mode	
O	Energized in Cool Mode	
B	Energized in Heat Emergency mode	

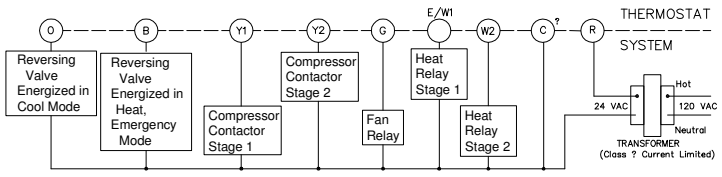


Figure 5. Typical wiring diagram for single transformer multi-stage systems

CHECK THERMOSTAT OPERATION

Note:

To prevent static discharge problems, touch side of thermostat to release static build-up before touching any keys.

If at any time during testing your system does not operate properly, contact a qualified serviceperson.

Fan Operation

If your system does not have a G terminal connection, skip to Heating System.

1. Turn on power to system.

2. Move FAN switch to ON position. The blower should begin to operate.

3. Move FAN switch to AUTO position. The blower should stop immediately

Heating System

1. Move system switch to heat mode. If the auxiliary heating system has a standing pilot, be sure to light it.

2. Press to adjust thermostat setting to 1℃ above room temperature. The heating system should begin to operate. The display should show "STG1". However, if the setpoint temperature display is flashing, the compressor lockout feature is operating (see Configuration menu, item 5).

3. Adjust temperature setting to 3° above room temperature. If your system configuration is set at MS2, HP2 or HP1, the auxiliary heat system should begin to operate and the

display should show "STG1+2".

4. Press to adjust the thermostat below room temperature. The heating system should stop operating.

Emergency System

EMER bypasses the Heat Pump to use the heat source wired to terminal E on the thermostat. EMER is typically used when compressor operation is not desired, or you prefer back-up heat only.

1. Press SYSTEM switch to select Heat mode. then press EMER key.. "EMER" will show on the display.

2. Press to adjust thermostat setting above room temperature. The Aux. heating system will begin to operate. The display will show "STG1" "EMER" to indicate that the Aux. system is operating.

3. Adjust temperature setting to 2℃ above room temperature. The auxiliary heat system should begin to operate and the display should show "STG1+2".

4. Press to adjust the thermostat below room temperature. The Aux. heating system should stop operating.

Cooling System

1. Move SYSTEM switch to select the Cool mode.

2. Press to adjust thermostat setting below room temperature. The blower should come on immediately on high speed, followed by cold air circulation.

The display should show “STG1”.

3. Adjust temperature setting to 2℃ below room temperature. The second stage cooling should begin to operate and the display should show “STG1+2”

4. Press to adjust the temperature setting above room temperature. The cooling system should stop operating.

CONFIGURATION MENU

INSTALLER/CONFIGURATION MENU				
Step	Press Button	Displayed (Factory Default)	Press up or down key to select	Comments
1	F	MS 2	SS1, HP2, HP1	Selects Single stage, Multi-stage, or Heat Pump (Single stage or 2-stage) System Configuration
2	F	(RECO)off	on	No use
3	F	(SPAN)2	1,3	Span(one stage)
4	F	(BLIT)on	off	BackLight
5	F	(SP2)2	1,3	Span(Two Stage)
6	F	(TEMP)F	C	Selects temperature display ℉ or ℃
7	F	HOUR(12)	24	Selects time format display 12hours or 24hours
8	F	COMP(OFF)	ON	Selects Compressor Lockout OFF or ON
9	F	COOL(2)	1	This model must select 2
10	F	FACT(0)	1,2	Select 2,all the setting will go back to factory default

The configuration menu allows you to set certain thermostat operating characteristics to your system or personal requirements. Set SYSTEM switch to OFF, then simultaneously press up and down keys to enter configuration menu. The display will show the first item in the configuration menu. The configuration menu table summarizes the configuration options. An explanation of each option follows. Press F key to change to the next menu item. To exit the menu and return to the normal operation, press Run Key. If no keys are pressed within fifteen Seconds, the thermostat will revert to normal operation.

1)Single Stage, Multi-stage or Heat Pump System Configuration

This control can be configured for Heat Pump or two stage heat/one stage cool multi-stage operation. The display indicates “MS2” (default for multi-stage mode) in the display. The Multi-stage configuration can be toggled to “SS1”, or “HP1” by pressing the up or down key. In Multi-stage configuration, EMER mode is useless.

2)Fast or Slow Cycle Selection(one stage)

3)Select Backlight function OFF or ON

4) Fast or Slow Cycle Selection(two stage)

5)Select F° or C° Readout.

Changes the display readout to Centigrade or Fahrenheit as required

6) Selects time format display 12hours or 24hours

7)Select Compressor Lockout COMP OFF or ON

Selecting COMP ON will cause the thermostat to wait 4 minutes before turning on the compressor if the heating and cooling system loses power. It will also wait 5 minutes minimum between cooling and heating cycles. This is intended to help protect the compressor from short cycling. Some newer compressors already have a time delay built in and do not require this feature. Your compressor manufacturer can tell you if

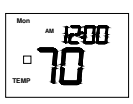
the lockout feature is already present in their system. When the thermostat compressor time delay occurs it will flash the setpoint for about four minutes.

8) This model must select 1

9)This model must select 1 to back factory Default

Setting Day and Time

TIME



• The LCD will show this information when batteries are first installed. The temperature will update after a few seconds.

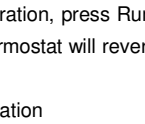
• During time and day setting mode, the temperature displays will go blank.

• Examples: Set the Thermostat to the current time of 2:16 pm on Saturday. TIME

Refer to the Steps below.

STEP 1:

TIME



• Press to enter time and day setting mode. The current hour and the AM/PM indicator will be flashing.

• Press up or down to change the Hour up or down to the current hour.

Note the AM/PM indicator, as the display will change at 12AM and 12PM.

STEP 2:

TIME

• Press again to change from hour setting to minute setting. The current minute will be flashing.

• Press up or down to change the Minute up or down to the current minute.

STEP 3:

TIME

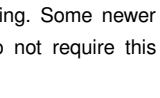
• Press again to change from minute setting to day setting. The current days will be flashing.

• Press up or down to change the Day up or down to the current day.

STEP 4:

TIME

RUN



• Press again to change back to the normal display.

Reviewing the Current Temperature Setting

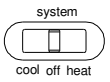
Current time and temperature.

■ Press less than 1 second .

■ Set Temperature is shown above current room temperature.

OPERATION

System Selector Switch



The System Selector Switch on the front of the thermostat determines the Operating mode of the thermostat. You may select COOL , OFF , HEAT, In order to take full advantage of this thermostat’s feature.

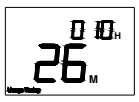
NOTE: Anytime you install or remove the thermostat form the wallplate, slide the System Selector to the OFF position to prevent the possibility of a rapid system On-Off.

Fan Switch

The Fan switch should normally be located in the AUTO position. The Fan will be turned on along with normal operation of your system. In a normal gas or oil furnace, the Fan will be turned on by your furnace after its warm-up delay. For electric heat, air conditioning, and heat pump operation, the Fan will turn on with the system. To run the Fan on continuously, slide the Fan switch to the ON position.

Energy Monitor

ENER



■ The Energy monitor feature measures and stores the amount of time the heating and air conditioning system operates. Usage can be display for Today (since 12 am), Yesterday, This Week (since Monday), Last Week (last Monday through Sunday), and Total (up to 999 Hrs). By monitoring your energy usage, you see how much the set-back periods are saving. To review energy usage, press to cycle through Today, Yesterday, this Week, Last Week, and Total. Press again to return to normal mode, or wait 15 seconds for the display to return to normal mode .You can also return to normal mode at any time by pressing RUN.

RUN

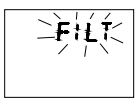
■ For example: This LCD display shows Today’s usage to be 10 Hours, 26 minutes.

■ Press and hold for 3 seconds to reset the Energy Monitor’s counters.

The display will blink, and counters will be cleared to zero.

NOTE: Clearing the Energy Monitor counter will also clear the Filter Monitor counter , as Filter usage and Total Energy usage are the same. Also, clearing the filter Monitor counter will clear ALL Energy Monitor counters as well.

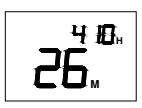
Filter Monitor



Your thermostat also keeps a record of the number of hours your filter has been in use. To maximize your system’s performance and energy efficiency, change or clear your filter regularly.

■ When the total system run time for heat and cool reaches 500 hours, you need clean or change your system’s filter, “FILT” will continue to flash until the counter is set back to zero.

■ Press to review total filter usage. The display will blink “FILT”



Then show the filter Monitor counter. After 15seconds, the display will return to normal mode, or you can hit RUN to exit immediately.

The Filter Monitor will display up to 999 hours and 59 minutes of usage. In this example, the counter is at 410 Hours, 26 minutes.

■ To reset the Filter Monitor counter, depress FILTER for 3 seconds. The display will blink, and the counter will be reset to zero.

NOTE: Clearing the Filter Monitor counter will also clear ALL Energy Monitor counters, as Filter usage and Total Energy usage are the same. Also, clearing the Energy Monitor counters will clear the Filter Monitor counter as well.

Keyboard lock

The keyboard can be locked to prevent unauthorized changes to the thermostat.

To lock or unlock the keyboard, press and hold run Key for 3 seconds. The keyboard is locked. when LOCK appears on the display.

■ All keys are locked, Any time a key is pressed, LOCK will appear on the display for 1 second.

Backlighting

Your thermostat has an electroluminescent lamp that backlights the display for easy viewing in the dark.

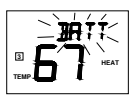
When any key is pressed the display is illuminated.

The display will remain illuminated for 8 seconds after the last key is pressed. This allows the light to stay on if you need to operate several keys.

NOTE: If the thermostat is in Low Battery warning condition, the backlight will not operate. Replace with 2 new AA alkaline batteries to restore the Backlight function.

Low Battery Warning

Your thermostat has a two-stage lower battery warning system. When the batteries are first detected to be weak, the first stage low battery warning is indicated

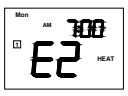


by “BATT” flashing on the LCD display. At your earliest convenience, you need to replace the batteries with 2 new AA alkaline batteries.

When the batteries become too weak for normal operation, the thermostat enters the second stage low battery warning which shuts down the thermostat. In this condition, “BATT” flashes alone on the display, and the thermostat will turn your system Off. Your system will remain shut-off until the batteries are replaced.

NOTE: The thermostat will still keep the current Set Temperature and Filter run time in memory until new batteries are installed. After confirming that new batteries have been inserted, the thermostat will return to normal operation.

Error Mode

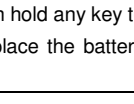


If the thermostat is unable to control your system due to an unexpected battery problem, the thermostat will enter Error Mode. In this condition, the thermostat flashes “E1”,“E2”,”E3”or”E4”on the LCD display, and shuts off your system. To correct this problem, replace the batteries with 2 new AA alkaline batteries, even if you have recently replaced them. Move the battery out, and then hold any key to release the rest energy. Then place the battery again. You will need confirm normal operation.

If Error Mode returns, please call us for further information.

Lcd display	information
E1	Sensor Error
E2	System switch Error
E3	No use
E4	E2 memory Error

Warning Mode



If the SYSTEM MONITOR SWITCH is close show the system have wrong. the thermostat flashes “E5”on the LCD display.

Auto Cut Off

Your thermostat will automatically cutoff in Heat mode if the room temperature rises above 95˚F (35˚C). It will cutoff in Cool mode if the room temperature drops below 40˚F (4˚C). Note that if your system has malfunctioned and no longer responds to thermostat controls, the Auto Cut-Off will have no effect.

TROUBLESHOOTING

Problem	Solution
SCRAMBLED OR DOUBLE DISPLAY (numbers over numbers)	1. Remove clear mylar sticker.
NO DISPLAY	1. Check battery connections and batteries 2. Move the battery out, and then hold any key to release the rest energy. Then place the battery again.
ENTIRE DISPLAY DIMS	1. Replace Batteries
AUTO/FAN DOES NOT TURN ON	1. Move Elec/Gas selector to opposite position is in the correct position. 2. There may be as much as 4 minute delay before the Heat or Cool system turns On-wait and check. (Compressor protection delay). 3，Check your circuit breaks and switches to ensure there is power to the system. 4. Replace batteries. 5. Make sure your furnace blower door is closed properly. 6. Check the position of the Furnace or Heat Pump selector switches: Normal/O/B.
ERRATIC DISPLAY	1. Move the battery out, and then hold any key to release the rest energy. Then place the battery again.
IF UNIT CONTINUES TO OPERATE IN THE OFF POSITION	1. Replace unit
THERMOSTAT PERMANENTLY READS “E1”,”E2”,”E3”, “E4”.	1. Replace unit.